Pre Calculus Honors **Name:**
1.3 Classwork **Date:**

Complete in notebook or separate paper.

1. Given is the line with equation $y = 3x - 2$.
   (a) Find five points on the line and arrange them in a table.
   (b) Graph the line.
   (c) Find the x-intercept and the y-intercept.
2. Find the slope-intercept form of the equation of the line through the points $(2, 7)$ and $(5, 2)$ and graph it.
3. Consider the line passing through the point $(2, 3)$ with slope $m = -1$.
   (a) Write down the point-slope equation of the line.
   (b) Write the equation in the slope-intercept form.
   (c) Find all intercepts.
4. Consider the line $y = 2x + 3$.
   (a) Find the equation in slope-intercept form of a parallel line through $(2, 5)$.
   (b) Find the equation of a perpendicular line through $(2, 7)$.
5. Consider the line L given by $2x + 3y = 6$.
   (a) Find the slope and intercepts of the line.
   (b) Find a point on the line and a point not on the line.
   (c) Write the equation of the line in point-slope form.
   (d) Find the equation of a line perpendicular to L, but passing through the same x-intercept as the line L.
6. Solve:
$$\begin{cases} y &= 2x - 1 \\ 2x - 5y &= 10 \end{cases}$$
7. Derive the point-slope form of the equation for a line by following these steps.
   (a) Let L be the line passing through the fixed point (x_1, y_1) and an arbitrary point (x, y).
   (b) Find the general formula for the slope of L.

MORE CHALLENGING

8. *Write down a system of 3 linear equations that has

   (a) exactly one solution

   (b) no solution

   (c) infinitely many solutions

9. **Find a pair of points that together with the points $(-2, 1)$ and $(2, -2)$ are the vertices of a square.

10. ***Find *all* points such that together with the points $(-2, 1)$ and $(2, -2)$ they are the vertices of a right triangle.